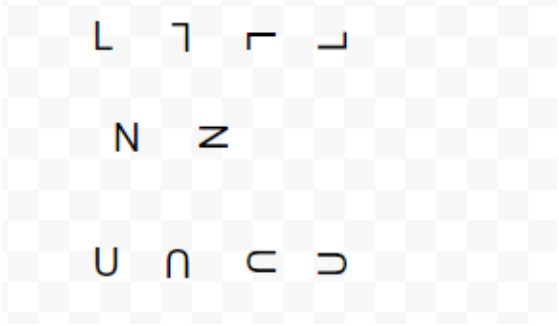
Task 1. Your task is to interpret a letter represented in a 3x3 matrix of cells using zeros and ones. Below are three sample 3x3 letter representations for the problem:

L			N			U		
1	0	0	1	0	1	1	0	1
1	0	0	1	1	1	1	0	1
1	1	1	1	0	1	1	1	1

Each of these representations maintains the intended letter when rotated in any direction. For example, the L matrix can be read as stated or rotated, and the shape still represents the same letter.

The following displays all possible representations of the letters L, N and U.



	1 0 0	1 1 1	1 1 1	0 0 1
L	1 0 0	0 0 1	1 0 0	0 0 1
	1 1 1	0 0 1	1 0 0	1 1 1

	1 0 1	1 1 1	
N	1 1 1	0 1 0	
	1 0 1	1 1 1	

	1 0 1	1 1 1	1 1 1	1 1 1
U	1 0 1	1 0 1	1 0 0	0 0 1
	1 1 1	1 0 1	1 1 1	1 1 1

You have a two-dimensional space containing n by m cells, where n and m are both greater than or equal to 3. Note that all n rows have the same number of columns, m.

Develop a program to count the occurrences of the letters L, N, and U in an n x m space, where n and m are greater than or equal to 3.

In cases where letters overlap are detected, each individual letter should be extracted and counted separately, as shown in the following example:

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6
1	0	0	1	0	1
1	0	0	1	1	1
1	1	1	1	0	1

Here you have two L's and one N

Col 1, Col 2 and Col 3 produce the first L

Col 2, Col 3 and Col 4 produce the second L

Col 4, Col 5 and Col 6 produce the only N

Input data: The data is stored in the input.txt file. The first line of the file indicates the number of rows (n), after it number of columns (m), followed by n rows of zeros and ones, separated by a single space.

Examples of different inputs:

```
3 3          The number of rows and columns the first case
1 0 0        The space where you need to look for the letters
1 0 0
1 1 1

3 8                          The second test
1 1 1 1 1 1 0 1
1 0 0 0 0 1 1 1
1 0 0 1 1 1 0 1

4 6
1 1 1 1 1 1
1 1 0 1 1 1
0 0 1 0 1 1
0 0 0 0 0 0

3 6
1 0 0 1 0 1
1 0 0 1 1 1
1 1 1 1 0 1
```

Output data: The response must be written to the **output.txt** file, which include the occurrences of each letter. See the output of for the input examples above:

Program execution time: no more than 1 second.

Note: all characters in text files must be 1 byte in size.

Examples:

Test1:	**Test2:**	**Test3:**	**Test4:**
3 3 **1 0 0** **1 0 0** **1 1 1**	**3 8** **1 1 1 1 1 1 0 1** **1 0 0 0 0 1 1 1** **1 0 0 1 1 1 0 1**	**4 6** **1 1 1 1 1 1** **1 1 0 1 1 1** **0 0 1 0 1 1** **0 0 0 0 0 0**	**3 6** **1 0 0 1 0 1** **1 0 0 1 1 1** **1 1 1 1 0 1**
Answer1:	**Answer2**	**Answer3**	**Answer4**
L-count 1 N-count 0 U-count 0	L-count 1 N-count 1 U-count 1	L-count 0 N-count 0 U-count 0	L-count 2 N-count 1 U-count 0